CURRICULUM VITAE

PERSONAL DETAILS

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EDUCATIONAL QUALIFICATIONS

Examination	Institute	Year	CGPA/%
Dual Degree (Bachelor & Master of Technology)	Department of Mechanical Engineering, Indian Institute of Technology Bombay	2011	**9.41/10**
Intermediate (12th)	National Public School, Bangalore	2005	**93.6%**
Matriculation (10th)	National Public School, Bangalore	2003	**94.8%**

GRE: 1580/1600	Quantitative: 800/800	Verbal: 780/800	Analytical Writing: 4.5/6.0	
TOEFL:120/120	Reading: 30/30	Listening: 30/30	Speaking: 30/30	Writing: 30/30
IELTS: 9/9	Reading: 9/9	Listening: 9/9	Speaking: 9/9	Writing: 8.5/9

FIELDS OF INTEREST

- Product design and life cycle
- Extremely affordable design
- Sustainable design
- Tools for design aid

PUBLICATIONS

- Mukundarajan H. et al., "System Engineering and Integration of Pratham, Indian Institute of Technology Bombay's first Student Satellite", *International Astronautical Congress*, Paper ID: IAC-10.B4.1.8, Prague, 2010 organized by International Astronautical Federation
- Mukundarajan H. et al., "Introduction to Pratham, IIT Bombay's Student Satellite Project", *Indian Small Satellite Systems Conference*, Bangalore, India, April 2010 organized by Indian Space Research Organisation (ISRO)

SCHOLASTIC ACHIEVEMENTS

- Achieved the **Advanced Performer (AP) grade** for attaining highest scores in **Computer Programming** *(CS101, Autumn 2006)*, Psychology *(HS203, Autumn 2007)* and Literature *(HS204, Spring 2008)* courses
- Currently **ranked 1st** in Dual Degree (CAD & Automation), Mechanical Engineering, 2006 batch
- Secured Semester Performance Index (**SPI**) of **10.00** in Spring 2008
- Represented India at the **VIII International Astronomy Olympiad (IAO)** in Sweden and **VII IAO** in Russia, winning **Best Laboratory Performance** and **bronze medal** respectively — *2003, 2002*
- Secured all India **8th place** and **19th place** in 2 years in the **Indian National Informatics Olympiad** held by Indian Association for Research in Computing Science (IARCS) — *2005, 2004*
- Awarded the **Shantilal H Goradia Scholarship** under the IIT Bombay Heritage Fund — *2008*
- Awarded the **Kishore Vaigyanik Protsahan Yojana (KVPY)** Fellowship by Indian Institute of Science (IISc) & Government of India — *2003*
- Awarded the **National Talent Search (NTS)** Scholarship by National Council for Education Research & Training (NCERT), Government of India — *2003*

ACADEMIC PROJECTS

Pratham, IIT Bombay Student Satellite — *Aug 2007 to date*

Group Leader - Integration, Thermal design & Mechanisms

Mentor: Prof. K. Sudhakar
Dept of Aero Engg, IITB

- **Co-founded** the **1st Student Satellite Project** of IIT Bombay, **Pratham**, an **atmospheric research** satellite worth **US$ 300,000**, to be launched in **Feb 2011** with support from Indian Space Research Organization (**ISRO**)
- As **Core Group Member**, responsible for **project planning** and laboratory facilities including setup of **assembly workbench** and **clean room maintenance**
- Developed the **Configuration Layout**, Weight Budget, **Integration Sequence**, Virtual Integration Check, Integration Fixtures, **Electrical Routing Layout**, **Thermal Model and** Antenna Deployment Mechanism of the satellite

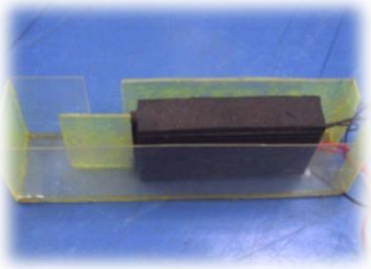
Satellite panels with components

Development of Neonatal Incubator specific to Indian healthcare requirements — *Dec 2009 to date*

Masters Thesis

Guide: Prof. C. Amarnath
Dept of Mech Engg, IITB

- Studied **neonatal** thermoregulatory and healthcare issues in **Indian socio-economic** and **climatic** conditions
- **Captured requirements** of neonatal incubator in the targeted market segment of **rural public health centres** and **urban hospitals** for **middle** & **lower income groups**
- Proposed and evaluated **design concepts** for temperature regulation, humidification and sterilization
- Performed experiments on **prototypes** of selected ideas
- Final project aim is to bring out a product with closed loop controls and ergonomic design features for field testing



Experimental thermoelectric heater

Smart Materials for Automotive Innovations — *Jan – Apr 2009*

Junior Thesis

Guide: Prof. N. Ramakrishnan
Dept of Mech Engg, IITB

- Carried out **detailed literature survey** of the use of **shape memory alloys**, **piezoelectrics**, **electro-** and **magneto-rheological fluids** and **electrochromic gels** in **automotive design**
- Performed a **Strength, Weakness, Opportunity and Threat (SWOT) analysis** of the **competitiveness** of smart materials as an **alternate automotive technology**

Product Design – Impact Detector for the Elderly — *May-Jun 2009*

Summer Project

Guides: Prof. P. S. Gandhi, Dept of Mech Engg, IITB;
Prof. B. K. Chakravarthy, Industrial Design Centre, IITB

- Designed and **developed prototype** of a wearable detector-transmitter unit of an impact detector for the elderly based on **ergonomics**, **stress analysis** and **aesthetics**
- Performed **fatigue analysis**, **material selection** and **process selection** for the product

Leaf-inspired design of armband base

Ergonomic Design Problems — *Jan – Apr (Spring) 2010*

Course Projects in BM640 – Ergonomics

Instructor: Prof. G. G.Ray
Industrial Design Centre, IITB

- Improved design of **night latch** from **system design** perspective for easy use in the dark
- Design of **population-optimized** activity chair for Indian university classrooms
- Design of day care centre and personal aids for **Alzheimer's patients**

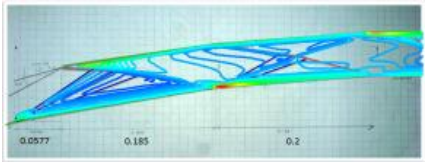
Sketches illustrating latch / chair designs

Hypersonic Flow Simulation for Scramjet Inlet — *Jan – Apr (Spring) 2009*

Course Project in AE622 – Computation of Hypersonic Flows

Instructor: Prof. K. Sinha
Dept of Aero Engg, IITB

- Proposed **design modifications** in scramjet engine inlet designed by Vikram Sarabhai Space Centre (**VSSC**) to reduce flow separation at shock reflections
- Generated a grid using **Fortran** and simulated **hypersonic flow** using in-house **Computational Fluid Dynamics** code to evaluate modifications



Flow field superimposed on proposed design

WORK EXPERIENCE

Milk Chilling System & Energy Generation from Automobile Suspensions — *Dec 2009*

Dhama Innovations Pvt Ltd, Ahmedabad
Incubated at the National Institute of Design

Guide: Mr. Kranthi Kiran Vistakula
Founder & CEO, Dhama Innovations

- Conceptualized and made a **prototype** of a cooling jacket and magnetic circulator for chilling of milk cans at collection stations for **Amul India Pvt Ltd**
- Jacket was able to cool a filled 40-litre milk can from 30°C to 4°C in 20 minutes
- Developed a **mechanism** using a bicycle pump and magnets to simulate generation of electric power in automobile suspensions using principles of electric generators

Evaluation of Pneumatic Artificial Muscle as a Robotic Actuator for SCARA systems — *Jul 2009*

Systemantics India Pvt Ltd, Bangalore

Guide: Dr. G. Jagannath Raju
Founder & CEO, Systemantics

- Derived a **theoretical model** for behavior of a Pneumatic Artificial Muscle based on geometry and thermodynamics
- Designed the **pneumatic circuit** and **performed** an **experiment** to record the relationship between extension, rate of extension, force exerted and inlet pressure using a **DSP based system**

Experimental setup to study PAM behavior

TECHNICAL SKILLS

Field of application	Software / hardware
3-D modeling	Solidworks, Inventor, AutoCAD
Structural analysis	ANSYS
Kinematic synthesis	ADAMS
Statistical quality analysis	Minitab
Real time control implementation	MATLAB / Simulink with d-Space / Control Desk
Programming languages	C / C++, Fortran
Microcontroller	Philips 89C51RD2 series
Microprocessors	Texas Instruments TMS320LF2407, Freescale S12XEP100

POSITIONS OF RESPONSIBILITY

- **Teaching Assistant** for a class of 105 students in the Machine Design course (ME423, Autumn 2010)
- **Conceived** and **implemented** ongoing **Technical Mentorship Programme** in my hostel to provide guidance for girls interested in technical activities; subsequently taken up as a Hostel Council initiative — *2007-2009*
- **Convener** of **Literati**, the Literary Arts club of IIT Bombay — *2007-2008*

EXTRACURRICULAR ACTIVITIES

Technical Awards

Event / Position		*Judgment Criterion*	*Team of*	*Awarded by*	*Dates*
Institute Technical Award		Outstanding performance in institute technical competitions		IIT Bombay	*2007 & 2008*
Hostel Technical Award		Contribution to hostel technical activities		Hostel 10, IIT Bombay	*2007 & 2008*
Product Design	1st	Design & build scaled model of user friendly fruit vendor's cart	3	Techfest, IITB	*2010*
SciTech	1st	Technical quiz	2	Techfest, IITB	*2009 & 2010*
Junkyard Wars	2nd	Build manually powered vehicle from given scrap metal in 24 hours	4	Techfest, IITB	*2008*
How Stuff Works	1st	Gadgets & phenomena quiz	2	Techfest, IITB	*2008*
Vapours	6th	Design & build mechanical device to vaporize the most acetone	3	Techfest, IITB	*2007*

Cultural Awards

Event	*Position*	*Awarded by*	*Dates*
Institute Cultural Award		IIT Bombay	*2008*
Hostel Cultural Award		Hostel 10, IIT Bombay	*2007, '08, '10*
Inter-hostel Literary Arts Championship	1st & 3rd	IIT Bombay Cultural Council	*2010 & 2008 respectively*
Nobel Memorial Quiz	1st	Embassy of Sweden in New Delhi	*2008*
Nihilanth Literature Quiz	1st	Nihilanth, Inter-IIT & IIM Quiz Fest	*2008*
Bournvita Quiz Contest	All Asia 2nd	Zee Television Network	*2000*
Discovery Quiz Contest	1st	Discovery Channel (India)	*1999*

Hobbies and Interests

- Studied **Carnatic vocal music** for 7 years; passed the Special Music Examination in 1999
- Completed basic course in **French** of 60hours duration with **A+ grade**
- Completed basic and upper basic courses in **Japanese** of 120 hours duration with **A+ grade** in both
- Drawing fictional characters**; work** displayed at **Kaladarshan**, IIT Bombay's annual **art show**

REFERENCES

- Prof. K. Sudhakar
  Professor, Department of Aerospace Engineering, IIT Bombay
  Co-PI of Centre for Aerospace Systems Design and Engineering (CASDE)
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- Prof. C. Amarnath
  Professor, Department of Mechanical Engineering, IIT Bombay
  Member, Society for Innovation and Entrepreneurship Governing Board
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